Kansas Agricultural Experiment Station Research Reports

Volume 4
Issue 6 *Turfgrass Research*

Article 8

2018

2013 National Turfgrass Evaluation Program Bermudagrass Test: 2013–2017 Summary Report

Linda R. Parsons
Kansas State University, lparsons@ksu.edu

Michael J. Shelton
Kansas State University, mshelton@ksu.edu

Jason J. Griffin
Kansas State University, jgriffin@ksu.edu

See next page for additional authors

Recommended Citation

Parsons, Linda R.; Shelton, Michael J.; Griffin, Jason J.; and Hoyle, Jared A. (2018) "2013 National Turfgrass Evaluation Program Bermudagrass Test: 2013–2017 Summary Report," *Kansas Agricultural Experiment Station Research Reports*: Vol. 4: Iss. 6. https://doi.org/10.4148/2378-5977.7598

2013 National Turfgrass Evaluation Program Bermudagrass Test: 2013–2017 Summary Report

Abstract

Kansas represents the northernmost region in the central United States where bermudagrass can be successfully grown as a perennial turfgrass. Historically, few cultivars that have both acceptable quality and adequate cold tolerance have been available to local growers. Because new introductions are continually being selected for improved hardiness and quality, both seeded and vegetative types need regular evaluation to determine their long-range suitability for use in Kansas.

Keywords

bermudagrass, National Turfgrass Evaluation Program, NTEP

Cover Page Footnote

Contribution number 18-630-S. This research was sponsored by a grant from the National Turfgrass Evaluation Program.

Authors

Linda R. Parsons, Michael J. Shelton, Jason J. Griffin, and Jared A. Hoyle

Turfgrass Research 2018

2013 National Turfgrass Evaluation Program Bermudagrass Test: 2013–2017 Summary Report

Linda R. Parsons, Michael J. Shelton, Jason J. Griffin, and Jared A. Hoyle

K-STATE TURFGRASS RESEARCH

JULY 2018

Summary

Kansas represents the northernmost region in the central United States where bermudagrass can be successfully grown as a perennial turfgrass. Historically, few cultivars that have both acceptable quality and adequate cold tolerance have been available to local growers. Because new introductions are continually being selected for improved hardiness and quality, both seeded and vegetative types need regular evaluation to determine their long-range suitability for use in Kansas.

Rationale

The National Turfgrass Evaluation Program (NTEP) locates studies nationwide to evaluate cultivars of a variety of turfgrass species under all types of environmental conditions. Wichita, KS, was selected as a standard trial site for the 2013 National Bermudagrass Test.

Objective

The objective of this study was to evaluate seeded and vegetative bermudagrass cultivars under south central Kansas conditions and submit data collected to the National Turfgrass Evaluation Program.

Study Description

During the summer of 2013, we established 18 seeded and 17 vegetative bermudagrass cultivars and experimental numbers at the John C. Pair Horticultural Center in Wichita, KS. Preparation for the study included incorporating nitrogen (N),

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

phosphorus (P), and potassium (K) as a 13-13-13 fertilizer into 105 5- × 5-ft study plots at a rate of 1 lb of N-P-K/1000 ft^2. We seeded or plugged the plots in a randomized complete block design. During the course of the study, we applied pre-emergent herbicides in March and maintained fertility of the plots at 0.25 to 0.50 lb of N/1000 ft^2 per growing month. We mowed the plots weekly during the growing season at 2.25–2.75 inches and returned clippings. We irrigated as necessary to prevent dormancy.

After planting, we collected information on percent cover, spring green up, quality, genetic color, leaf texture, absence of seed heads, and fall color retention. Percent cover was rated visually on a scale of 0 to 100%. We rated spring green up, quality, genetic color, leaf texture, absence of seed heads, and fall color retention visually on a scale of 1 to 9 (1 = poorest, 6 = acceptable, and 9 = optimum measure).

Results

We started the trial on June 21, 2013 (Figure 1), and began collecting data four weeks later by looking at percent cover as a measure of initial cultivar establishment. At that time, vegetative types Patriot and FAES 1325 and seeded type NuMex-Sahara were the best established (Table 1). By the end of the 2013 growing season, vegetative types TifTuf (DT-1), FAES 1325, and 11-T-510, and seeded types MBG 002 and North Shore SLT, had developed the best plot cover. In May 2014–2017, we started the growing season by looking at spring green up when the overall study visually appeared to be about 50% green. We found that several vegetative cultivars, on average, broke dormancy the earliest starting with OKC 1302 and OKC 1131. The earliest seeded cultivars to green up were Yukon and JSC 2009-6-s. Throughout the growing season, which ran from May through September in 2014–2016 and May through October in 2017, we rated the turf monthly for quality. Ratings were influenced by degree of cover, weed infestation, and disease resistance as well as turf color, texture, and density. The trial's best overall performers were vegetative types JSC 2-21-18-v, OKC 1302, and JSC 2-21-1-v. The seeded types did not perform quite as well with the best three being Monaco (JSC 2007-13-s), JSC 2009-6-s, and JSC 2007-8-s. See Table 2 for average monthly and overall average quality ratings. During the summers of 2014–2017, we looked at turf color and texture and found that on average vegetative varieties Patriot, Celebration, and 11-T-251 were the darkest green and that the darkest green seeded varieties were PST-R6T9S and Yukon (Table 1). Vegetative type OKC 1163 had on average significantly the finest texture. Of the seeded types, Monaco (JSC 2007-13-s) and Riviera were the most finely textured. On September 23, 2015, and July 18, 2017, we rated for seed head display of the vegetative varieties and found that 11-T-510, Latitude 36, and OKC 1302 had the fewest seed heads. Of the seeded varieties, NuMex-Sahara, Yukon, and OKS 2011-1 had the fewest seedheads (Table 3). In October 2014, 2015, and 2017, when the overall study visually appeared to still be about 50% green, we looked at fall color retention and found that on average vegetative types FAES 1327 and TifTuf (DT-1) and seeded types Yukon and Princess 77 retained their color the longest.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Throughout the course of the study, we noticed that turf-plot cover for some cultivars deteriorated over winter and then improved again during the growing season. As cover variability could be indicative of winter hardiness, we decided to compare percent cover for September 2015, May 2016, and September 2016. The vegetative types with the best September 2016 percent cover and least over-winter variability were JSC 2-21-18-v, OKC 1163, and Astro. The best seeded types were Riviera and JSC 2007-8-s.

Complete 2013 National Bermudagrass Test results and more information on NTEP can be found online at: *http://www.ntep.org/*.

Acknowledgment

This research was sponsored by a grant from the National Turfgrass Evaluation Program.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 1. 2013 establishment and 2014–2017 spring green up, genetic color, and leaf texture of bermudagrass cultivars at Wichita, KS[1,2]

Cultivar/ experimental number	Seeded/ vegetative	% Cover		Spring green up	Genetic color	Leaf texture
		Jul. 18, 2013	Sep. 17, 2013			
JSC 2-21-18-v	V	12.7	91.7	5.2	5.6	7.6
OKC 1302	V	10.0	83.3	5.5	6.3	7.2
JSC 2-21-1-v	V	13.0	93.3	5.2	4.9	7.9
*Latitude 36[3]	V	10.0	85.0	4.9	6.2	7.5
11-T-510	V	22.3	94.3	4.3	7.7	7.1
OKC 1131	V	14.7	90.0	5.3	7.2	7.0
*TifTuf (DT-1)	V	16.7	96.0	4.2	6.3	7.1
*Patriot	V	45.0	93.3	4.3	8.7	6.1
*Astro	V	23.3	90.0	4.8	5.9	5.7
*Monaco (JSC 2007-13-s)	S	16.0	83.3	4.3	7.1	5.9
JSC 2009-6-s	S	15.0	88.3	4.8	6.8	5.6
JSC 2007-8-s	S	3.0	83.3	4.6	7.4	5.7
JSC 2009-2-s	S	5.3	86.7	4.3	7.3	5.4
FAES 1326	V	9.3	85.0	3.7	6.8	7.0
*Riviera	S	13.0	81.7	4.7	6.5	5.8
MBG 002	S	11.7	94.3	3.8	7.0	5.5
*Tifway	V	9.3	81.7	3.6	7.6	6.8
OKS 2011-1	S	1.0	63.3	4.4	6.6	5.3
OKC 1163	V	14.3	91.7	5.1	5.6	8.8
*Yukon	S	15.3	61.7	4.8	7.8	5.6
BAR C291	S	16.0	91.0	3.9	6.2	5.6
PST-R6CT	S	3.0	76.7	4.0	7.6	5.7
FAES 1325	V	38.3	95.0	3.8	8.1	6.0
FAES 1327	V	8.0	71.7	4.0	7.8	6.8
*Kashmir (PST-R6P0)	S	11.0	92.7	4.2	7.3	5.4
*Celebration	V	23.3	86.7	3.2	8.6	6.1
OKS 2011-4	S	2.3	65.0	4.3	7.1	5.3
*North Shore SLT	S	14.3	93.3	3.9	6.8	5.3
11-T-251	V	14.0	91.7	3.0	8.5	6.9
OKS 2009-3	S	8.7	68.3	3.7	6.8	5.2

continued

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 1. 2013 establishment and 2014–2017 spring green up, genetic color, and leaf texture of bermudagrass cultivars at Wichita, KS[1,2]

Cultivar/ experimental number	Seeded/ vegetative	% Cover		Spring green up	Genetic color	Leaf texture
		Jul. 18, 2013	Sep. 17, 2013			
PST-R6T9S	S	1.7	68.3	4.2	7.9	5.6
*NuMex-Sahara	S	25.0	89.3	3.2	6.4	5.4
*Princess 77	S	7.7	90.0	3.8	7.2	5.5
MSB 281	V	8.0	76.7	3.3	6.3	5.8
12-TSB-1	S	8.3	90.0	3.3	7.5	5.5
LSD[4]		15.4	22.8	0.5	0.4	0.5

[1]Visual ratings were based on a scale of 1 to 9 (1 = poorest measure, 6 = acceptable, and 9 = optimum measure).
[2]Percent cover was rated visually on a scale of 0 to 100%.
[3]Cultivars marked with "*" were commercially available in 2017.
[4]To determine statistical differences among entries, subtract one entry's mean from another's. If the result is larger than the corresponding least significant difference (LSD) value, the two are statistically different.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 2. 2014–2017 quality ratings for bermudagrass cultivars at Wichita, KS[1]

Cultivar/ experimental number	Seeded/ vegetative	Quality						
		May	Jun.	Jul.	Aug.	Sept.	Oct. 2017	Avg.
JSC 2-21-18-v	V	6.3	6.1	6.1	4.8	5.3	4.0	5.7
OKC 1302	V	5.8	6.3	6.3	5.1	5.4	4.3	5.7
JSC 2-21-1-v	V	5.8	6.2	6.0	4.8	5.5	4.0	5.6
*Latitude 36[2]	V	5.6	5.8	6.3	4.6	5.3	5.0	5.5
11-T-510	V	4.4	6.3	6.2	5.0	6.0	4.0	5.5
OKC 1131	V	5.2	5.8	5.8	4.8	5.9	4.7	5.5
*TifTuf (DT-1)	V	5.3	6.2	6.3	4.6	4.9	5.0	5.5
*Patriot	V	4.8	5.8	6.4	4.9	5.6	4.7	5.4
*Astro	V	4.8	5.2	5.8	4.9	5.2	4.0	5.1
*Monaco (JSC 2007-13-s)	S	4.7	5.3	5.4	5.1	5.3	3.7	5.1
JSC 2009-6-s	S	5.0	5.2	5.3	4.8	5.3	4.3	5.1
JSC 2007-8-s	S	4.8	5.3	5.3	5.0	5.5	3.7	5.1
JSC 2009-2-s	S	4.4	5.0	5.5	5.2	5.4	3.3	5.0
FAES 1326	V	4.5	5.4	5.8	4.4	5.0	5.0	5.0
*Riviera	S	4.8	5.1	5.5	4.8	5.3	3.3	5.0
MBG 002	S	4.2	5.1	5.3	4.8	5.7	4.0	5.0
*Tifway	V	4.3	5.5	6.1	4.3	4.8	5.0	5.0
OKS 2011-1	S	4.7	5.2	5.3	4.8	5.0	3.3	4.9
OKC 1163	V	5.1	5.3	5.2	3.8	5.0	5.0	4.9
*Yukon	S	4.2	4.8	5.4	4.9	5.2	4.7	4.9
BAR C291	S	4.1	5.0	5.2	4.8	5.0	3.0	4.7
PST-R6CT	S	3.9	4.8	4.7	4.8	5.3	3.7	4.6
FAES 1325	V	3.3	4.4	5.1	4.8	5.8	4.0	4.6
FAES 1327	V	4.0	4.6	5.3	4.8	4.4	4.3	4.6
*Kashmir (PST-R6P0)	S	3.7	4.6	4.9	4.6	5.3	3.3	4.6
*Celebration	V	2.9	4.2	5.2	4.6	5.3	4.3	4.4
OKS 2011-4	S	4.0	4.3	4.8	4.4	4.8	3.3	4.4
*North Shore SLT	S	3.1	4.3	4.8	4.7	5.3	3.0	4.4
11-T-251	V	3.1	4.0	4.8	4.3	4.8	4.0	4.2
OKS 2009-3	S	3.4	4.3	4.3	4.4	4.8	3.0	4.2

continued

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 2. 2014–2017 quality ratings for bermudagrass cultivars at Wichita, KS[1]

Cultivar/ experimental number	Seeded/ vegetative	Quality						
		May	Jun.	Jul.	Aug.	Sept.	Oct. 2017	Avg.
PST-R6T9S	S	3.4	3.8	3.9	4.2	4.8	3.0	4.0
*NuMex-Sahara	S	2.4	3.7	4.5	4.0	4.7	3.3	3.8
*Princess 77	S	2.3	2.8	3.7	3.3	4.4	3.3	3.2
MSB 281	V	2.3	3.3	3.8	3.3	3.2	3.0	3.2
12-TSB-1	S	2.1	2.6	3.1	3.3	3.6	4.3	2.9
LSD[3]		0.6	0.5	0.6	0.4	0.6	0.9	0.4

[1]Visual ratings were based on a scale of 1 to 9 (1 = poorest measure, 6 = acceptable, and 9 = optimum measure).
[2]Cultivars marked with "*" were commercially available in 2017.
[3]To determine statistical differences among entries, subtract one entry's mean from another's. If the result is larger than the corresponding least significant difference (LSD) value, the two are statistically different.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 3. 2015 and 2017 seed heads; 2014, 2015, and 2017 fall color; and fall 2015, spring 2016, and fall 2016 percent cover of bermudagrass cultivars at Wichita, KS[1,2]

Cultivar/ experimental number	Seeded/ vegetative	Seed heads	Fall color	% cover		
				Fall 2015	Spring 2016	Fall 2016
JSC 2-21-18-v	V	7.7	4.6	97.0	97.7	97.0
OKC 1302	V	8.5	4.0	89.0	90.0	92.7
JSC 2-21-1-v	V	8.0	4.3	98.3	92.3	98.0
*Latitude 36[3]	V	8.5	4.7	97.0	90.0	95.3
11-T-510	V	9.0	4.9	97.7	86.7	97.0
OKC 1131	V	7.5	3.6	97.7	91.3	94.3
*TifTuf (DT-1)	V	7.0	5.6	99.0	91.3	97.0
*Patriot	V	8.2	3.3	95.0	85.0	94.3
*Astro	V	5.3	4.0	98.0	93.0	97.0
*Monaco (JSC 2007-13-s)	S	5.3	4.0	94.7	83.3	96.0
JSC 2009-6-s	S	4.8	3.9	98.3	91.0	97.0
JSC 2007-8-s	S	5.0	4.0	94.7	87.7	97.0
JSC 2009-2-s	S	5.7	3.6	96.3	84.7	96.0
FAES 1326	V	7.2	5.1	98.3	92.7	97.0
*Riviera	S	6.0	3.9	97.0	90.7	97.0
MBG 002	S	5.3	4.0	94.0	83.3	95.3
*Tifway	V	8.0	5.3	97.0	85.7	96.0
OKS 2011-1	S	6.2	3.9	96.3	82.3	94.3
OKC 1163	V	8.0	5.1	97.7	93.0	98.0
*Yukon	S	6.3	5.7	92.3	83.3	90.0
BAR C291	S	5.7	3.9	94.0	78.3	94.3
PST-R6CT	S	4.3	4.4	95.0	81.7	96.0
FAES 1325	V	7.3	5.0	86.7	75.0	91.7
FAES 1327	V	8.0	5.9	89.0	85.7	94.3
*Kashmir (PST-R6P0)	S	3.8	3.8	94.0	83.3	95.0
*Celebration	V	7.0	4.3	96.3	70.0	96.0
OKS 2011-4	S	5.8	4.2	90.7	76.7	81.7
*North Shore SLT	S	5.2	3.6	92.3	60.0	91.7
11-T-251	V	5.3	4.2	95.0	55.0	94.3
OKS 2009-3	S	4.8	4.1	91.7	66.7	94.3

continued

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Table 3. 2015 and 2017 seed heads; 2014, 2015, and 2017 fall color; and fall 2015, spring 2016, and fall 2016 percent cover of bermudagrass cultivars at Wichita, KS[1,2]

Cultivar/ experimental number	Seeded/ vegetative	Seed heads	Fall color	% cover		
				Fall 2015	Spring 2016	Fall 2016
PST-R6T9S	S	3.8	3.6	90.0	68.3	80.0
*NuMex-Sahara	S	6.7	4.3	81.7	41.7	75.0
*Princess 77	S	4.3	5.4	76.7	46.7	76.7
MSB 281	V	4.3	2.7	90.7	51.7	66.7
12-TSB-1	S	4.8	4.6	65.0	41.7	76.7
LSD[4]		1.1	0.7	8.4	13.9	9.2

[1]Visual ratings were based on a scale of 1 to 9 (1 = poorest measure, 6 = acceptable, and 9 = optimum measure).
[2]Percent cover was rated visually on a scale of 0 to 100%.
[3]Cultivars marked with "*" were commercially available in 2017.
[4]To determine statistical differences among entries, subtract one entry's mean from another's. If the result is larger than the corresponding least significant difference (LSD) value, the two are statistically different.

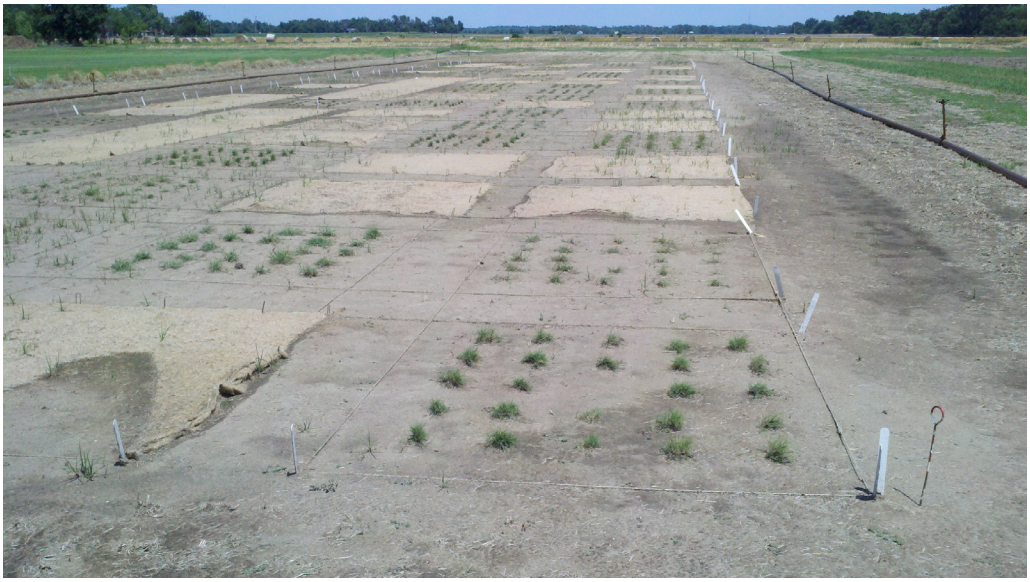

Figure 1. Establishment of bermudagrass trial as of July 2, 2013, eleven days after planting.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-STATE TURFGRASS RESEARCH

Figure 2. Bermudagrass trial on Turfgrass Field Day, August 3, 2017.

K-STATE Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service